

MCT1 T1470A polymorphism influences adherence to strength training in overweight and obese men following a weight loss program

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Introduction. The monocarboxylate transporter (MCT) family member MCT1 transports lactate into and out of myocytes. Oxidative cells import lactate through MCT1 as a substrate, being the role of MCT1 in glycolysis-derived lactate efflux less clear. MCT1 T1470A polymorphism (rs1049434), which has been related with lactate metabolism and sports specialty^{1, 2}, could be an influencing factor for exercise adherence. Therefore the aim of this study was to relate the adherence to different training modalities with the T1470A MCT1 polymorphism in overweight and obese men following a weight loss program (WLP).

Methods. Seventy overweight and obese (body mass index 25-34.9 kg/m²) males, aged 18-50 years, followed a WLP of 24 weeks, combining exercise and diet. Subjects were randomized into three training groups: strength, S; endurance, E; or concurrent strength and endurance, SE; with a training frequency of 3 times/week, and an intensity progressing from 50 to 60% of 15 repetition maximum or heart rate reserve³. One-way ANCOVA adjusting by adherence to diet was used to compare adherence to training among genotypes (TT, TA or AA).

Results. The ANCOVA test showed differences among genotypes ($p=0.01$) within the S group, having the TT participants less adherence (Mean \pm Standard Error) ($79.9 \pm 2.9\%$) than the TA ($91.5 \pm 1.7\%$; $p=0.01$) and the AA ($92.7 \pm 2.9\%$; $p=0.02$). No significant differences were found for this variable among genotypes in the E (TT = $92.9 \pm 3.3\%$; TA = $90.8 \pm 2.3\%$; AA = $87.9 \pm 3.6\%$) or the SE (TT = $87.5 \pm 3.1\%$; TA = $87.8 \pm 3.5\%$; AA = $84.8 \pm 3.3\%$) exercise groups.

Conclusion. Our results suggest that the MCT1 T1470A polymorphism could influence adherence to strength exercise in men, being those with a minor lactate efflux from the myocytes (TT)¹ less adherent to the program. Although the TT genotype has been related with sprint/power sports, the lactate availability could

determine the acceptance of a resistance exercise routine within a WLP in sedentary overweight/obese men.